

The Work of an Rh Committee

Experiences in a Private General Hospital

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THE CONSULTING SERVICES offered by the Rh Committee at Saint John's Hospital have elevated the standard of obstetric care in the Santa Monica area. This is a liaison committee made up of obstetricians, pediatricians and a clinical pathologist, all of whom have a special interest in hemolytic disease of the newborn. A "home-town" study group, it has served to give local physicians a keen appreciation of the significance of hemolytic disease due to Rh and ABO incompatibilities.

In our community several pediatricians lead the way in educating the medical profession about the Rh factor. One of them, Dr. Gilbert Jorgensen⁴ in 1949 established a dependable laboratory for Rh problems and offered a consultation service. He distributed printed instructions for the management of both the sensitized and nonsensitized Rh-negative obstetrical patients. He was aided by Dr. Philip Sturgeon,¹⁰ who now independently operates the Rh consulting laboratory. The late Clement Molony⁷ soon presented a two-year report from Children's Hospital on exchange transfusion and the usefulness of the direct Coombs test.

Shortly thereafter the author,⁸ representing the obstetrical department, presented a paper on the management of the Rh-negative patient to the hospital staff and also to Section on Obstetrics and Gynecology of the California Medical Association. As the general staff members became more "Rh conscious," obstetricians, pediatricians and the hospital pathologist all gave liberally of their time in regular and "curbstone" consultations. Actually an informal Rh committee had been functioning for several years before one was organized. These individual efforts stimulated the staff to anticipate hemolytic disease and to plan for treatment. For several years the infants most affected by Rh incompatibility were transferred promptly to Children's Hospital, where often blood was ready upon admission because preparations had been made in advance. A program such as this should be established by the staff of every hospital which does not have facilities for exchange transfusion.

• An Rh committee was formed at Saint John's Hospital in Santa Monica to provide preadmission consultation on all potential Rh and ABO problems and to maintain a file of information on Rh-negative patients in the delivery room. It is urged that no patient go to the delivery room without the known Rh-ABO type as part of the labor record. All obstetrical patients at the hospital are given "obstetrical information cards" for use as a memorandum on the labor record. A pink card identifies the Rh-negative patient.

The program keeps the staff "Rh-conscious" and has improved teamwork among the obstetricians, pediatricians, nurses and the laboratory.

The narrative might end at this point, except for the fact that not all physicians were able to follow this pattern in every case. As our obstetrical department enlarged, we noted an increasing number of unanticipated cases of jaundice and hemolytic disease. As exchange transfusions were first attempted, sometimes there were delays longer than it would have taken to transfer the infant to another hospital. It became apparent that a more efficient plan was needed.

An Rh committee was formed in 1955 to expedite teamwork among obstetrician, pediatrician, laboratory and delivery room and nursery staffs.

The committee* consists of three pediatricians, two obstetricians and a clinical pathologist. Since lack of communication can disrupt the best laid plans, one of the initial steps was directed to developing a complete file for the labor room of current obstetrical patients whose babies would be potential candidates for hemolytic disease. All obstetricians were requested to submit a report to the Rh committee no later than the 36th week of pregnancy on the following cases:

1. All Rh-negative mothers.
2. All gravid mothers known to be previously sensitized by any other blood factor.

A carbon triplicate form for Rh history has been used to supply the following information to the

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*The original committee consisted of: Gilbert Jorgensen, M.D., A. Borden Polson, M.D.,† Nathan Smith, M.D.,‡ Blake Watson, M.D., Bruce B. Rolf, M.D., George Hummer, M.D.§ Replaced in present committee by: †Harvey Shipper, M.D., ‡Nemie Shore, M.D., §Peter V. Van Schoonhoven, M.D.

committee: Name of patient, obstetrician and attending pediatrician; patient's age and expected date of confinement; obstetrical history in detail and report of outcome with special reference to anemia, icterus or stillbirth; Rh and ABO type on both patient and husband, and genotype on husband if the type is known; one antibody titer at least at 34th or 35th week of gestation; previous transfusion history and remarks. There is also space for recommendations by the Rh committee.

The completed forms are reviewed once or twice a week by a member of the Rh committee, who adds his recommendation. Of the triplicate, one copy is returned promptly to the obstetrician; the second, which is for the patient's hospital record, is filed with the delivery room; and the third copy is retained by the committee for the purpose of periodic review.

The following is an outline of the procedures and the rules followed in dealing with the obstetrical cases described above:

- I. *Routine tests on the above designated mothers include:*
 1. ABO and Rh typing.
 2. At least one test for antibody titer during the last 5 to 6 weeks of gestation.
- II. *Routine tests on infants of anticipated nonsensitized mothers (on cord blood or from baby):*
 1. Rh type.
 2. Direct Coombs test.
 3. Hemoglobin determination.
- III. *Routine tests on anticipated sensitized babies:*
 1. Rh and ABO typing.
 2. Direct Coombs test.
 3. Hemoglobin determination.
 4. Serum bilirubin (micrograms).
 5. Blood smear examination.
 6. Reticulocyte count.
- IV. *Jaundice of the newborn:*

The nursery staff has been instructed to notify the pediatrician if jaundice appears in the first 24 hours and also to order the following laboratory tests:

1. Rh and ABO typing.
2. Coombs test.
3. Hemoglobin determination.
4. Serum bilirubin.

The same procedure is recommended for babies showing moderate to severe jaundice at any time during the neonatal period without exception. A reduced laboratory fee is offered for the entire group of tests.

The committee urges physicians to record the ABO typing as well as the Rh on the labor record of all obstetrical patients as an aid in the early evaluation of jaundice of the newborn.

Transfusion Team

Exchange transfusions may be performed only by physicians who have been approved by the Rh committee. Advance notice of the impending delivery should be given to the transfusionist so that he may confirm that the blood bank is prepared to supply his needs.

Laboratory Service

The described program could not have been established without the full cooperation of the director of the laboratory and his staff. Although Saint John's Hospital has not maintained a full time night laboratory technician, a technician on night call has responded to any call for routine Coombs test on infants from Rh-negative mothers. This has become an established procedure in spite of the more lenient initial recommendation that cord blood from non-sensitized cases might be held until 7 a.m., provided that reports were completed by 9 a.m.

Obstetrical Information Cards

In addition, we have borrowed the obstetrical information card from our neighboring institution, Santa Monica Hospital, where its use was initiated by the author as a simple alternate method of informing the delivery room staff not only of Rh incompatibilities, but also of any obstetrical complications. This is a wallet-sized identification card which is given to all patients during pregnancy, and which the patient presents to the labor room nurse on admission to the hospital. On it is recorded the Rh and ABO type, antibody titer, age, parity, preference of analgesia and anesthesia, name of pediatrician and obstetrician and space for pertinent remarks. A white card is used for Rh-positive and a pink card for Rh-negative patients. The card is attached to the patient's labor record and is a conspicuous reminder of the Rh-ABO type as well as of any anticipated complications. In essence, it is a miniature prenatal record for the benefit of the nurses and the physicians, and it is especially helpful if the patient need be delivered by another obstetrician unfamiliar with her history.

This card serves an additional purpose by warning the patient, "*Do not eat solid food even in early labor*" as a safeguard against aspiration during anesthesia.

The idea of the patient's carrying a blood identification card is not new, nor is the use of a simple memorandum for complicated cases. However, the combination of these features with the pink colored

card to identify the Rh-negative patient has made the obstetrical information card a successful means of communicating vital information at the time of labor.

If obstetricians were infallible, in submitting prenatal records to the labor room by the 36th week of gestation, the obstetrical information card would hardly be necessary.

RESULTS

All cases of icterus of the newborn delivered in 1958 at Saint John's Hospital were reviewed by the Rh committee and reported as follows:

Erythroblastosis due to Rh.....	33	
Erythroblastosis due to ABO.....	36	69
Icterus—Negative Coombs test result (genetically potential Rh incompatibility).....	9	
Icterus—Negative Coombs test result (neither Rh nor ABO incompatibility).....	9	18
	—	87
Stillbirths due to erythroblastosis.....		5
Total live births.....		3,905

Twenty-five of the 33 infants with erythroblastosis due to Rh incompatibility received one or more exchange transfusions, but only five of the 36 in whom it was due to ABO incompatibility required transfusion. Of the 36 infants in the ABO group 21 had a positive result of direct Coombs test and 15 had a negative result. This affirms the opinion that close observation of all newborn infants for jaundice by an alert nursing staff is essential for early recognition in nearly half of the cases of hemolytic disease due to ABO incompatibility. There was no mortality or kernicterus among the infants treated by exchange transfusion. The only neonatal death was that of a severely affected 2700-gram infant who died a few minutes following emergency Cesarean section which was done for placental abruptio and fetal distress at thirty-seven and a half weeks' gestation. The advisability of early or premature induction had been considered, in light of a history of four consecutive stillbirths following the birth of the first child. However, this was not done because the expected date of confinement was uncertain.

DISCUSSION

Every general hospital accepting obstetrical patients should offer around-the-clock laboratory service for the prompt diagnosis or exclusion of hemolytic disease. The obstetrician should have a feasible plan to transfer an affected infant within an hour after birth to an adequate facility should an exchange transfusion not be immediately available, or arrange for the patient to be delivered where such a facility is available.⁹

Early induction of labor or Cesarean section is not recommended in cases of isoimmunization except when repeated stillbirths have occurred, and then only after studied consultation. Preadmission consultation with the transfusionist in every case of known Rh-sensitization is desirable. Should elective pre-term induction of labor be contemplated, it is advantageous to select a date favorable to the pediatrician and to plan the time of delivery during the daylight hours when a full staff of trained personnel is available. As an additional advantage of preadmission consultation, the transfusionist may confirm in advance that there is a supply available of comparatively fresh Rh-negative blood which is compatible with the serum of the infant's mother.

The Rh committee currently is reviewing the unclassified cases of icterus neonatorum for etiological factors.

It is now evident that vitamin K in large doses may produce hyperbilirubinemia, kernicterus and even death in premature infants.^{1,5} Since placental transmission of vitamin K has been established,^{3,6} its routine administration to mothers in labor to protect the infant from possible hypoprothrombinemia should be reevaluated by every obstetrician. Its use certainly should be avoided if labor is premature or delivery imminent.² Adequate protection of the infant can be safely accomplished without risk of bilirubinemia,^{2,3} by giving 1 mg. of vitamin K parenterally at birth.

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